

First U.S.-China International Workshop on Polar Science: Arctic Ocean Expedition

Minutes

In accordance with Annex XV to the Protocol on Marine and Fishery Science and Technology Cooperation between the United States of America and the People's Republic of China, and at the invitation of Dr. ZHANG Zhanhai, Deputy Director of the Chinese Arctic and Antarctic Administration (CAA) of the State Oceanic Administration (SOA) of the People's Republic of China, Dr. John Calder, Director of the Arctic Research Office under the Office of Oceanic and Atmospheric Research (OAR) of the National Oceanic and Atmospheric Administration (NOAA) of the United States of America, led a group of U.S. scientists and officials to Qingdao and Beijing, China from May 25-June 1, 2002 (see list of participants in Appendix I).

Dr. ZHANG and Dr. Calder co-chaired the First U.S.-China Workshop on Polar Science convened at the First Institute of Oceanography (FIO) of SOA in Qingdao, China on May 27-28, 2002. On behalf of the Chinese participants, Dr. ZHANG opened the workshop, and Mr. QU Tanzhou, Director of CAA and Academician Dr. YUAN Yeli, Director of FIO, extended warm welcome to the U.S. participants and the invited scientists from Japan and the Republic of Korea. Dr. Calder expressed his pleasure to lead the U.S. group and co-chair the workshop. Mr. René Eppi, Director of the International Activities Office, Office of Oceanic and Atmospheric Research (OAR), NOAA, extended his congratulatory remarks.

Both China and the U.S. shared common understanding that a complex suite of significant atmospheric, oceanic, and terrestrial changes has occurred in the Arctic in the last decades. It is likely that these changes are affecting virtually every part of the Arctic and mid-latitude weather and are now having both direct and indirect impacts on transportation, natural resource use, agriculture, energy, health, infrastructure, not only in the Arctic, but also in the mid-latitude hemispheric regions. Despite the suspicion that those significant changes in the Arctic have been detected, there are still many scientific uncertainties to be addressed. Both sides also realized that international cooperation and improved coordination of research among countries located in or impacted by polar areas would be crucial to achieve more rapid understanding of these complex and important scientific questions.

Focused Thematic Areas

Both sides expressed mutual interest to further the development of ideas and thoughts on how to improve communication and research collaboration between the two countries, along with other countries by focusing on five focused themes in polar sciences: physical oceanography, atmospheric chemistry, ice physics, marine biology and chemistry, and international cooperation (see the workshop agenda in Appendix II):

Fields of Potential Collaborative Activities

In this context, collaborative efforts between the U.S. and China as well as with other interested countries were encouraged to be improved through: 1) Joint research cruises; 2) Intensive

observation sites and in operation of observing networks; 3) Exchange of scientists; and 4) Sharing existing data and models to improve collective knowledge.

New Panel on Polar Science

The co-chairs discussed and agreed to establish members of a new panel on polar science. The U.S. side agreed to host the First U.S.-China Joint Coordination Panel Meeting for Polar Science Cooperation in late May/early summer 2003 in the United States before the 16th Joint Working Group Meeting on Cooperation in the Field of Marine and Fishery Science and Technology is convened. The size of panel membership would be no greater than ten (10) scientists and government administrative officials from each side. The specific venue and date of this panel meeting will be confirmed by co-chairs through correspondence. Dr. ZHANG and Dr. Calder will serve as co-chairs and plan to organize the panel meeting.

Collaboration through Joint Research Cruises

Also, as the first cooperative activity between the two countries in polar science under the auspices of the Protocol, both sides expressed interest in collaboration through joint research cruise. The co-chairs agreed to further expedite the development of ideas and coordination between the two countries, along with Japan and Canada, to find a way for inviting at least two (2) Chinese scientist aboard the Japan-Canada-U.S. Joint Research Cruise in summer of 2002. In return, both the U.S. and China will consider and discuss at an appropriate time to invite at least two (2) U.S. scientists onboard the Chinese Research Cruise scheduled for summer of 2003. More substantive and logistical details regarding these two joint research cruises will be followed up by the co-chairs through correspondence and coordination among the countries concerned.

These minutes were signed on May 28, 2002, in Qingdao, People's Republic of China, in duplicate in English and Chinese, being equally authentic.

John Calder
U.S. Chairman
For the Office of Oceanic and
Atmospheric Research of
the National Oceanic and
Atmospheric Administration

ZHANG Zhanhai
Chinese Chairman
For the Chinese Arctic and
Antarctic Administration of
the State Oceanic Administration

List of Participants

People's Republic of China

1. State Oceanic Administration (SOA)

ZHU Lili, Department of Science and Technology of the State Oceanic Administration (SOA)

WANG Antao, Department of International Cooperation of the State of Oceanic Administration (SOA)

2. Chinese Arctic and Antarctic Administration (CAA)

QU Tanzhou, Director of the Chinese Arctic and Antarctic Administration of the State Oceanic Administration (SOA)

ZHANG Zhanhai (Co-Chairman), Vice Director of the Chinese Arctic and Antarctic Administration of the State Oceanic Administration (SOA)

CHEN Liqi, Honorary Director of the Chinese Arctic and Antarctic Administration of the State Oceanic Administration (SOA)

XU Shijie, Head of the International Cooperation Division, Chinese Arctic and Antarctic Administration of the State Oceanic Administration (SOA)

XIA Limin, Head of the General Affairs Division, Chinese Arctic and Antarctic Administration of the State Oceanic Administration (SOA)

WANG Yong, (Executive Secretary), Vice-Head of the Science Development Division, Chinese Arctic and Antarctic Administration of the State Oceanic Administration (SOA)

3. Polar Research Institute of China (PRIC)

PAN Zengdi, Director of the Polar Research Institute of China of the State Oceanic Administration (SOA)

YANG Huigen, Vice-Director of the Polar Research Institute of China of the State Oceanic Administration (SOA)

DONG Zhaoqian, Honorary Director of the Polar Research Institute of China of the State Oceanic Administration (SOA)

CHEN Bo, Research Scientist, Polar Research Institute of China of the State Oceanic Administration (SOA)

KANG Jiancheng, Research Scientist, Polar Research Institute of China of the State Oceanic Administration (SOA)

4. National Marine Environmental Forecasting Center (NMEFC)

LIU Qinzhen, Research Scientist, National Marine Environmental Forecasting Center of the State Oceanic Administration (SOA)

BAI Shan, Research Scientist, National Marine Environmental Forecasting Center of the State Oceanic Administration (SOA)

ZHANG Lin, Research Scientist, National Marine Environmental Forecasting Center of the State Oceanic Administration (SOA)

LIU Yu, Research Scientist, National Marine Environmental Forecasting Center of the State Oceanic Administration (SOA)

YIN Tao, Research Scientist, National Marine Environmental Forecasting Center of the State Oceanic Administration (SOA)

NEI Lixin, Research Scientist, National Marine Environmental Forecasting Center of the State Oceanic Administration (SOA)

5. First Institute of Oceanography (FIO)

YUAN Yeli, Director of the First Institute of Oceanography of the State Oceanic Administration (SOA)

ZHAO Jiping, Vice-Director of the First Institute of Oceanography of the State Oceanic Administration (SOA)

GAO Aiguo, Research Scientist, First Institute of Oceanography of the State Oceanic Administration (SOA)

PU Shujian, Research Scientist, First Institute of Oceanography of the State Oceanic Administration (SOA)

YU Weidong, Research Scientist, First Institute of Oceanography of the State Oceanic Administration (SOA)

SHI Jiuxin, Research Scientist, First Institute of Oceanography of the State Oceanic Administration (SOA)

6. Second Institute of Oceanography (SIO)

ZHANG Qing, Research Scientist, Second Institute of Oceanography of the State Oceanic Administration (SOA)

PAN Jianming, Research Scientist, Second Institute of Oceanography of the State Oceanic Administration (SOA)

7. Third Institute of Oceanography (TIO)

ZHU Laimin, Research Scientist, Third Institute of Oceanography (TIO) of the State Oceanic Administration (SOA)

8. LASG, Institute of Atmospheric Physics (IAP)

WANG Bin, Director, LASG, Institute of Atmospheric Physics of the Chinese Academic Science (CAS)

LI Jianping, Vice-Director, LASG, Institute of Atmospheric Physics of the Chinese Academic Science (CAS)

YU Rucong, Research Scientist, LASG, Institute of Atmospheric Physics of the Chinese Academic Science (CAS)

9. Chinese Academy of Meteorological Science (CAMS)

BIAN Lingen, Research Scientist, Chinese Academy of Meteorological Science of the Chinese Meteorological Administration (CMA)

ZHAO Ping, Research Scientist, Chinese Academy of Meteorological Science of the Chinese Meteorological Administration (CMA)

10. Institute of Oceanology of the Chinese Academy of Science (IOCAS)

SUN Song, Vice-Director of the Institute of Oceanology, Chinese Academic Science

LI Chaolun, Research Scientist, Institute of Oceanology, Chinese Academic Science

10. Ocean University of Qingdao

TIAN Jiwei, Director, College of Physics and Environment of Oceanography, Ocean University of Qingdao

GAO Guoping, Research Scientist, Ocean University of Qingdao

11. Dalian University of Technology

LI Zhijun, Research Scientist, Dalian University of Technology

12. Xiamen University

CHEN Min, Research Scientist, Xiamen University

Japan

Mitsuo Fukuchi, Director of the Center for Antarctic Environmental Monitoring, National Institute of Polar Research (NIPR)

Kohji Shimada, Research Scientist, Ocean Observation and Research Department, Japan Marine Science and Technology Center (JMASTEC)

Shigeto Nakabayashi, Chief, Frontier Research Promotion Department, Japan Marine Science and Technology Center (JMASTEC)

Republic of Korea

Ho Il Yoon, Principal Research Scientist, Polar Sciences Laboratory, Korea Ocean Research and Development Institute (KORDI)

Kyung Ho Chung, Marine Chemist, Polar Sciences Laboratory, Korea Ocean Research and Development Institute (KORDI)

United States

John Calder (Co-Chairman), Director, Arctic Research Office, Office of the Oceanic and Atmospheric Research, National Oceanic and Atmospheric Administration

René Eppi, Director, International Activities Office, Office of the Oceanic and Atmospheric Research, National Oceanic and Atmospheric Administration

Dosoo Jang, (Executive Secretary), Asia Program Manager, International Activities Office, Office of the Oceanic and Atmospheric Research, National Oceanic and Atmospheric Administration

Julian X.L. Wang, Meteorologist, Air Resources Laboratory, Office of the Oceanic and Atmospheric Research, National Oceanic and Atmospheric Administration

Russell C. Schnell, Deputy Director, Climate Monitoring and Diagnostics Laboratory
Office of the Oceanic and Atmospheric Research, National Oceanic and Atmospheric
Administration

Steven Walter Warren, Director/Commanding Officer, National/Naval Ice Center, U.S. Navy.

Catherine Frances Cahill, Assistant Professor, University of Alaska Fairbanks.

Russell R. Hopcroft, Assistant Professor, Institute of Marine Science, University of Alaska
Fairbanks

Ian Rosman MacDonald, Associate Research Scientist/Oceanographer, Geochemical and
Environmental Research Group, Texas A & M University

Glen Gawarkiewicz, Physical Oceanographer, Woods Hole Oceanographic Institution

Jiayan Yang, Associate Scientist, Woods Hole Oceanographic Institution

International Arctic Research Center (IARC)

Roger Louis Colony, Professor, Group Leader of the Atmosphere/Ocean/Ice Group,
International Arctic Research Center (IARC)

Noriyuki Tanaka, Group Leader of the Multi-Disciplinary Group,
International Arctic Research (IARC)

David Walsh, Associate Research Professor/Oceanographer, Atmosphere/Ocean/Ice Group,
International Arctic Research Center (IARC)

Jingfeng Wu, Associate Professor, Multi-Disciplinary Group, International Arctic Research
Center (IARC)

**First China-U.S. International Workshop on Polar Science:
Arctic Ocean Expedition**

Qingdao, China, May 27-29, 2002

Agenda

Saturday, May 25, 2002

Participants arrive in Qingdao,
Hotel: Kylin Hotel, Qingdao

Sunday, May 26, 2002

14:30 Meeting of Co-Chairs at Kylin Hotel
18:00 Icebreaker reception at Function Hall (5th Floor), Kylin Hotel

Monday, May 27, 2002

Session I: Opening Ceremony

at the First Institute of Oceanography (FIO)

08:30 Depart hotel to FIO
08:45-08:50 Group photos in the front of FIO main building
09:00-10:00 Introduction of the participants
ZHANG Zhanhai, Chinese Chairman (Lead)
John Calder, U.S. Chairman

Welcoming Remarks
QU Tanzhou
Director of the Chinese Arctic and Antarctic Administration/SOA

YUAN Yeli
Director of the First Institute of Oceanography/SOA

Opening Remarks
ZHANG Zhanhai, Chinese Chairman
John Calder, U.S. Chairman

Congratulatory Remarks
René Eppi
Director, International Activities Office of NOAA Research

10:00-10:20 Coffee break

Session II: Arctic Expedition Plan: 2002-2003

Chairperson: Dr ZHANG Zhanhai

- 10:20-10:40 *Invited presentations on U.S. 2002 Arctic expedition plan*
Overview - John Calder, U.S. Chairman
- Key U.S. projects:
- 10:40-11:10 *The hidden ocean: Exploration under the ice of the Western Arctic*
Russell Hopcroft, University of Alaska Fairbanks
- 11:10-11:30 *Polar research projects and goals for 2002 cruise*
Ian MacDonald, Texas A&M University

Chairperson: Dr. John Calder

- 11:30-11:50 *Invited presentations on China 2003 Arctic expedition plan*
Overview – ZHANG Zhanhai, Chinese Chairman
- 11:50-13:30 Lunch at Kylin Hotel (5th Floor)
- Key Chinese projects:
- 13:30-13:45 *Water structure and its variation of Chukchi Sea in 1999*
ZHAO Jinping, Vice-Director of the First Institute of Oceanography/SOA
- 13:45-14:00 *Seasonal and interannual variation of Sea Ice in the Arctic Ocean*
LIU Qinzheng, National Marine Environmental Forecasting Center/SOA
- 14:00-14:15 *Summary of biological studies on Chinese Arctic Expedition in 1999 and preliminary biological project on NOAA Arctic Expedition in 2002*
CHEN Bo, Polar Research Institute of China/SOA
- 14:15-14:30 *Simulation of the effects of the Arctic sea-ice anomaly on the Asian monsoon*
ZHAO Ping, Chinese Academy of Meteorological Science of the Chinese Meteorological Administration (CMA)
- 14:30-14:45 *The nutrients and carbon-cycling processes in water column and its benthic responses in Arctic Ocean*
PAN Jianming, Second Institute of Oceanography/SOA
- 14:45-15:05 Coffee break

Session III: Discussion of Opportunities for Potential Collaborative Activities

Chairpersons for the first half: Drs. ZHAO Jinping and Roger Colony

- Topical Presentations:
- 15:05-15:25 *National/Naval Ice Center overview and research summary*
Steve Warren, U.S. Navy
- 15:25-15:40 *Study on Carbon Cycling and Aerosol Chemistry over the Chukchi Sea and the Adjacent Seas*
CHEN Liqi, Third Institute of Oceanography/SOA
- 15:40-15:55 *Water masses in the Arctic Ocean and their exchange with the oceans*
DONG Zhaoqian, Polar Research Institute of China/SOA

15:55-16:15	<i>Multi-decadal scale variability of surface meteorology and sea ice extent</i> Roger Colony, International Arctic Research Institute (IARC)
16:15-16:30	<i>Compare the pelagic ecosystems of the North Pacific Ocean</i> SUN Song, Institute of Oceanology, Chinese Academy of Science (CAS)
16:30-16:50	<i>Long-range atmospheric transport</i> Catherine Cahill, University of Alaska Fairbanks
16:50-17:05	<i>Basic physical evidences of Arctic ice interactions with Air and Ocean</i> LI Zhijun, Dalian University of Technology
18:00	Welcoming Reception hosted by FIO (Yinhai Restaurant)

Tuesday, May 28, 2002

Session III: Discussion of Opportunities for Potential Collaborative Activities(Continued)

Chairpersons for the second half: Drs. SUN Song and Steven Warren

09:00-09:20	<i>Arctic climate variability and its interaction with mid-latitudes or global climate regimes</i> Julian Wang, Air Resources Laboratory, NOAA Research
09:20-09:35	<i>Arctic Oscillation and its teleconnection</i> YU Weidong, First Institute of Oceanography/SOA
09:35-09:50	<i>Ice remote sensing for the Arctic Survey</i> BAI Shan, National Marine Environmental Forecasting Center/SOA
09:50-10:05	<i>Physical mechanisms of the Arctic Oscillation and its global impacts</i> LI Jianping, Institute of Atmospheric Physics of CAS
10:05-10:20	<i>LASG Global Climate System Model Plan---An Arctic Ocean - Sea-Ice Model Coupled with Global Ocean Circulation Model</i> YU Rucong, Institute of Atmospheric Physics of CAS
10:20-10:40	<i>Long-term atmospheric observations</i> Russell Schnell, Climate Monitoring and Diagnostics Laboratory, NOAA Research
10:40-11:00	Coffee break
11:00-11:15	<i>Using isotopes ($2H$, $18O$, $226Ra$, $228Ra$) as tracers of water mixing and transport in the Arctic Ocean</i> MIN Chen, Xiamen University
11:15-11:30	<i>The structure of flow through the Bering Strait and relation to SST</i> TIAN Jiwei, Ocean University of Qingdao
11:30-11:45	<i>Joint Western Arctic Climate Studies (JAWACS)</i> Koji Shimada, Japan Marine Science and Technology Center (JAMSTEC)
11:45-12:00	<u>Small working group discussion</u> Chairpersons: Drs. ZHANG Zhanhai and John Calder
12:00-13:30	Lunch at Kylin Hotel (5 th Floor)
13:30-15:00	Small working group discussion (<i>continued</i>)
15:00-15:20	Coffee break
15:20-16:20	Summary of results from small group discussions (Summary reports by group leaders)

16:20-16:50 General discussion of Arctic expeditions and identification of
 areas of mutual interest

Session IV: Closing Ceremony

16:50-17:10 Closing Remarks
 John Calder, U.S. Chairman
 Zhang Zhanhai, Chinese Chairman

19:00 Dinner hosted by CAA
 at Kylin Hotel (5th Floor)

Wednesday, May 29, 2002

08:30-15:00 Sightseeing (Lao Shan Mountain) in Qingdao
18:00 Dinner and leave for Beijing by train
 (by invitation only –John Calder, René Eppe, Steven Warren,
 Catherine Cahill, Roger Colony, and Julian Wang)
21:10 Train departs Qingdao to Beijing
 Participants (non invited) leave from Qingdao to home
 on May 30

Thursday, May 30-Friday May 31, 2002

 Meetings with SOA and CAA

Saturday, June 1, 2002

 Six invited U.S. participants return to the U.S.